General Specifications

GS 01C25E01-01EN

EJX430A Gauge Pressure Transmitter

DP harp **EJ**X

[Style: S2]

The high performance gauge pressure transmitter EJX430A features single crystal silicon resonant sensor and is suitable to measure liquid, gas, or steam pressure. The EJX430A outputs a 4 to 20 mA DC signal corresponding to the measured pressure. It also features quick response, remote setup and monitoring via BRAIN or HART communications, and diagnostics. The multi-sensing technology provides the advanced diagnostic function to detect such abnormalities as an impulse line blockage or heat trace breakage. FOUNDATION Fieldbus and PROFIBUS PA protocol types are also available.

All EJX series models in their standard configuration, with the exception of the Fieldbus and PROFIBUS types, are certified by TÜV as complying with SIL 2 for safety requirement.

STANDARD SPECIFICATIONS

Refer to GS 01C25T02-01EN for Fieldbus communication type and GS 01C25T04-01EN for PROFIBUS PA communication type for the items marked with " \Diamond ."

-	asurement an/Range	MPa	psi (/D1)	bar (/D3)	kg/cm ² (/D4)
	Span	2.5 to 500 kPa	10 to 2000 inH2O	0.025 to 5	0.025 to 5
Н	Range	−100 to 500 kPa	-400 to 2000 inH2O	-1 to 5	-1 to 5
A	Span	0.0175 to 3.5	2.5 to 500	0.175 to 35	0.175 to 35
	Range	-0.1 to 3.5	-14.5 to 500	-1 to 35	-1 to 35
	Span	0.08 to 16	12 to 2300	0.8 to 160	0.8 to 160
В	Range	-0.1 to 16	-14.5 to 2300	-1 to 160	-1 to 160

SPAN AND RANGE LIMITS

PERFORMANCE SPECIFICATIONS

Zero-based calibrated span, linear output, wetted parts material code 'S' and silicone oil, unless otherwise mentioned.

For Fieldbus and PROFIBUS PA communication types, use calibrated range instead of span in the following specifications.

Specification Conformance

EJX series ensures specification conformance to at least $\pm 3\sigma$.



Reference Accuracy of Calibrated Span

(includes the effects of terminal-based linearity, hysteresis, and repeatability)

Measurement span		Н
Reference	X ≤ span	±0.04% of Span
accuracy	X > span	±(0.005+0.0049 URL/span)% of Span
X		70 kPa (280 inH2O)
UR (upper rar	-	500 kPa (2000 inH2O)

Measurement span		A	В	
Reference	X ≤ span	±0.04% of Span		
accuracy	X > span	±(0.005+0.0035 URL/span)% of Span		
Х		0.35 MPa (50 psi)	1.6 MPa (230 psi)	
UR (upper rar		3.5 MPa (500 psi)	16 MPa (2300 psi)	

Ambient Temperature Effects per 28°C (50°F) Change

Capsule	Effect
Н	±(0.04% Span + 0.0125% URL)
A and B	±(0.04% Span + 0.009% URL)

Stability (All normal operating condition) ±0.1% of URL per 10 years

Power Supply Effects(Output signal code D, E and J)

 ± 0.005 % per Volt (from 21.6 to 32 V DC, 350 $\Omega)$



Vibration Effects

Amplifier housing code 1 and 3: Less than 0.1% of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10-60 Hz, 0.21 mm displacement/60-2000 Hz 3 g) Amplifier housing code 2:

Less than $\pm 0.1\%$ of URL when tested per the requirements of IEC60770-1 field with general application or pipeline with low vibration level (10-60 Hz 0.15mm displacement /60-500 Hz 2g)

Mounting Position Effects

Rotation in diaphragm plane has no effect. Tilting up to 90 degree will cause zero shift up to 0.4 kPa (1.6 inH₂O) which can be corrected by the zero adjustment.

Response Time (All capsules) "0"

90 ms

150 msec for H capsule with Wetted Parts Material code H, M, T, A, D and B.

When software damping is set to zero and including dead time of 45 ms (nominal)

FUNCTIONAL SPECIFICATIONS

Output "◊"

Two wire 4 to 20 mA DC output with digital communications, linear or square root programmable. BRAIN or HART FSK protocol are superimposed on the 4 to 20 mA signal.

Output range: 3.6 mA to 21.6 mA

Output limits conforming to NAMUR NE43 can be pre-set by option code C2 or C3.

Failure Alarm (Output signal code D, E and J)

Output status at CPU failure and hardware error; Up-scale: 110%, 21.6 mA DC or more (standard) Down-scale: -5%, 3.2 mA DC or less

Analog output status at process abnormality (Option code /DG6);

The result of process abnormality detected by the advanced diagnostic function can be reflected to an analog alert status. The following three setting modes are available.

			Mode		
		Burnout	Fall back	Off	
Standard		110%, 21.6mA or more	Holds to a		
	/C1 -2.5%, 3.6mA or less spec wi Option Code /C2 -1.25%, 3.8mA or less output from	specified value within the	Normal output		
Option Code		output range from 3.6mA to	Normal output		
		21.6mA			

Damping Time Constant (1st order)

Amplifier's damping time constant is adjustable from 0.00 to 100.00 s by software and added to response time.

Note: For BRAIN protocol type, when the software damping is set to less than 0.5 s, communication may occasionally be unavailble during the operation, especially while output changes dynamically. The default setting of damping ensures stable communication. Update Period "◊" Pressure: 45 ms

Zero Adjustment Limits

Zero can be fully elevated or suppressed, within the lower and upper range limits of the capsule.

External Zero Adjustment

External zero is continuously adjustable with 0.01% incremental resolution of span. Re-range can be done locally using the digital indicator with rangesetting switch.

Integral Indicator (LCD display) "0"

5-digit numerical display, 6-digit unit display and bar graph.

The indicator is configurable to display one or up to three of the following variables periodically.; pressure in %, scaled pressure, measured pressure. See also "Factory Setting".

Burst Pressure Limits

69 MPa (10,000 psi)

Self Diagnostics

CPU failure, hardware failure, configuration error, and over-range error for pressure and capsule temperature.

User-configurable process high/low alarm for pressure is also available, and its status can be output when optional status output is specified.

Advanced Diagnostics (optional) "0"

Applicable for Output signal code E, J and F. • Impulse line blockage detection

The impulse line condition can be calculated and detected by extracting the fluctuation component from the static pressure signal.

 Heat trace monitoring The change of the flange temperature calculated by using the two temperature sensors built in the EJX enables to detect the heat trace breakage or the abnormal temperature due to the failure.

Signal Characterizer (Output signal code D, E and J)

User-configurable 10-segment signal characterizer for 4 to 20 mA output.

Status Output (optional, output signal code D, E and J)

One transistor contact output (sink type) to output the status of user configurable high/low alarm for pressure.

Contact rating : 10.5 to 30 V DC, 120 mA DC max. Refer to 'Terminal Configuration' and 'Wiring Example for Analog Output and Status Output.'

SIL Certification

All the EJX series transmitters except Fieldbus and PROFIBUS PA communication types are certified by TÜV in compliance with the following standards; IEC 61508: 2000; Part1 to Part 7 Functional Safety of Electrical/electronic/ programmable electronic related systems; SIL 2 capability for single transmitter use, SIL 3 capability

for dual transmitter use.

NORMAL OPERATING CONDITION (Optional features or approval codes may affect limits.)

Ambient Temperature Limits

-40 to 85°C (−40 to 185°F) -30 to 80°C (−22 to 176°F) with LCD display

Process Temperature Limits -40 to 120°C (-40 to 248°F)

Ambient Humidity Limits

0 to 100% RH

Maximum Over Pressure

Capsule Pressure		Pressure
	H and A	16 MPa (2300 psi)
	В	25 MPa (3600 psi)*

*: 24 MPa (3400 psi) for Wetted Parts Material code H, M, T, A, D and B.

Working Pressure Limits (Silicone oil)

Maximum Pressure Limits

Capsule	Pressure
Н	500 kPa (2000 inH2O)
А	3.5 MPa (500 psi)
В	16 MPa (2300 psi)

Minimum Pressure Limit See graph below

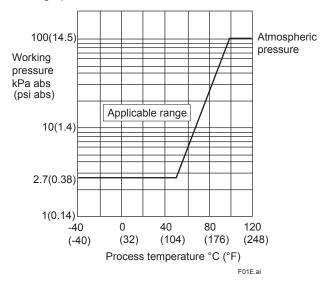


Figure 1. Working Pressure and Process Temperature

Supply & Load Requirements

(Output signal code D, E and J. Optional features or approval codes may affect electrical requirements.)

With 24 V DC supply, up to a 550 Ω load can be used. See graph below.

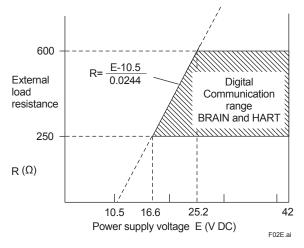


Figure 2. Relationship Between Power Supply Voltage and External Load Resistance

Supply Voltage "0"

- 10.5 to 42 V DC for general use and flameproof type.
 10.5 to 32 V DC for lightning protector (option code /A.)
- 10.5 to 30 V DC for intrinsically safe, type n, or nonincendive type.
- Minimum voltage limited at 16.6 V DC for digital communications, BRAIN and HART

Load (Output signal code D, E and J) 0 to 1290Ω for operation

 $250 \text{ to } 600\Omega$ for digital communication

Communication Requirements "◊" (Approval codes may affect electrical requirements.) BRAIN

Communication Distance

Up to 2 km (1.25 miles) when using CEV polyethylene-insulated PVC-sheathed cables. Communication distance varies depending on type of cable used.

Load Capacitance

0.22 µF or less

Load Inductance 3.3 mH or less

5.5 III OF less

Input Impedance of communicating device 10 k Ω or more at 2.4 kHz.

EMC Conformity Standards CE , C N200

EN61326-1 Class A, Table2 (For use in industrial locations) EN61326-2-3

EN61326-2-5 (for PROFIBUS only)

European Pressure Equipment Directive 97/23/EC Sound Engineering Practice

Safety Requirement Standards

- EN61010-1
- Altitude of installation site: Max. 2,000 m above sea level
- Installation category: I
- Pollution degree: 2
- Indoor/Outdoor use

□ PHYSICAL SPECIFICATIONS

Wetted Parts Materials

Diaphragm, Cover Flange, Process Connector, Capsule Gasket, and Vent/Drain Plug Refer to "MODEL AND SUFFIX CODES."

Process Connector Gasket

PTFE Teflon Fluorinated rubber for option code N2 and N3

Non-wetted Parts Materials

Bolting

B7 carbon steel, 316L SST or 660 SST

Housing

Low copper cast aluminum alloy with polyurethane, mint-green paint (Munsell 5.6BG 3.3/2.9 or its equivalent), or ASTM CF-8M Stainless Steel

Dearees of Protection

IP66/IP67, NEMA TYPE 4X

Cover O-rings

Buna-N, fluoro-rubber (optional)

Name plate and tag 316 SST

Fill Fluid

Silicone, Fluorinated oil (optional)

Weight

[Installation code 7, 8 and 9] 2.8 kg(6.2 lb) for wetted parts material code S, without integral indicator, mounting bracket, and process connector. Add 1.5 kg (3.3lb) for Amplifier housing code 2.

Connections

Refer to "MODEL AND SUFFIX CODES." Process connection of cover flange: IEC61518

< Related Instruments>

Power Distributor: Refer to GS 01B04T01-02E or GS 01B04T02-02E BRAIN TERMINAL: Refer to GS 01C00A11-00E

< Reference >

- 1. DPharp EX is a registered trademark of Yokogawa Electric Corporation.
- 2. FieldMate; Trademark of Yokogawa Electric Corporation.
- 3. Teflon; Trademark of E.I. DuPont de Nemours & Co.
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- 6. FOUNDATION Fieldbus; Tradmark of Fieldbus Foundation.
- 7. PROFIBUS; Registered trademark of Profibus Nutzerorganisation e.v., Karlsruhe, Germany.

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■ MODEL AND SUFFIX CODES

Model	Suffix Co	des	Description
EJX430A			Gauge pressure transmitter
Output signal	-D -E		4 to 20 mA DC with digital communication (BRAIN protocol) 4 to 20 mA DC with digital communication (HART 5 protocol) 4 to 20 mA DC with digital communication (HART 5 / HART 7 protocol) (Refer to GS 01C25T01-01EN) Digital communication (FOUNDATION Fieldbus protocol, refer to GS 01C25T02-01EN)
	-G		Digital communication (PROFIBUS PA protocol, refer to GS 01C25T04-01EN)
Measurement span (capsule) Wetted parts	H A B	·····	2.5 to 500 kPa (10 to 2000 inH2O) 0.0175 to 3.5 MPa (2.5 to 500 psi) 0.08 to 16 MPa (12 to 2300 psi) Refer to "Wetted Parts Material" Table.
material *1			
Process connecti	1 2 3 ► 5		without process connector (Rc1/4 female on the cover flanges) with Rc1/4 female process connector with Rc1/2 female process connector with 1/4 NPT female process connector with 1/2 NPT female process connector with uprocess connector (1/4 NPT female on the cover flanges)
Bolts and nuts ma	G		B7 carbon steel 316L SST 660 SST
Installation	-7 -8 -9 -B		Vertical piping, right side high pressure, and process connection down side Vertical piping, left side high pressure, and process connection down side Horizontal piping and right side high pressure Horizontal piping and left side high pressure Bottom Process Connection, left side high pressure ^{*2} Universal flange ^{*2}
Amplifier housing	3.		Cast aluminum alloy Cast aluminum alloy with corrosion resistance properties ^{*3} ASTM CF-8M stainless steel ^{*4}
Electrical connec		0 2 4 5 7 9 A C D	G1/2 female, one electrical connection without blind plugs 1/2 NPT female, two electrical connections without blind plugs M20 female, two electrical connections without blind plugs G1/2 female, two electrical connections and a blind plug ^{*5} 1/2 NPT female, two electrical connections and a blind plug ^{*5} M20 female, two electrical connections and a blind plug ^{*5} G1/2 female, two electrical connections and a 316 SST blind plug 1/2 NPT female, two electrical connections and a 316 SST blind plug M20 female, two electrical connections and a 316 SST blind plug
Integral indicator		D E N	Digital indicator * ⁶ Digital indicator with the range setting switch * ⁷ (None)
Mounting bracket	t	► B D J K M N	 304 SST 2-inch pipe mounting, flat type (for horizontal piping) 304 SST 2-inch pipe mounting, L type (for vertical piping) 316 SST 2-inch pipe mounting, flat type (for horizontal piping) 316 SST 2-inch pipe mounting, L type (for vertical piping) 316 SST 2-inch pipe mounting (for bottom process connection type) (None)
Optional Codes			□/ Optional specification

The "▶" marks indicate the most typical selection for each specification.

*1: 🖄 Users must consider the characteristics of selected wetted parts material and the influence of process fluids. The use of inappropriate materials can result in the leakage of corrosive process fluids and cause injury to personnel and/or damage to plant facilities. It is also possible that the diaphragm itself can be damaged and that material from the broken diaphragm and the fill fluid can contaminate the user's process fluids. Be very careful with highly corrosive process fluids such as hydrochloric acid, sulfuric acid, hydrogen sulfide, sodium

hypochlorite, and high-temperature steam (150°C [302°F] or above). Contact Yokogawa for detailed information of the wetted parts material.

- *2: *3: Applicable only for Wetted parts material code S.
- Not applicable for electrical connection code 0, 5, 7, 9 and A. Content rate of copper in the material is 0.03% or less and content rate of iron is 0.15% or less.
- *4: Not applicable for electrical connection code 0, 5, 7 and 9.
- *5: Material of a blind plug is aluminum alloy or 304 SST.
- *6: Not applicable for output signal code G.
- *7: Not applicable for output signal code F.

Table. Wetted Parts Materials

Wetted parts material code	Cover flange and process connector	Capsule	Capsule gasket	Vent/Drain plug
S #	ASTM CF-8M *1	Hastelloy C-276 ^{*2} (Diaphragm) F316L SST, 316L SST (Others)	Teflon-coated 316L SST	316 SST
H# ASTM CF-8M *1		Hastelloy C-276 *2	PTFE Teflon	316 SST
M # ASTM CF-8M *1		Monel	PTFE Teflon	316 SST
T ASTM CF-8M *1		Tantalum	PTFE Teflon	316 SST
A#	Hastelloy C-276 equivalent *3	Hastelloy C-276 *2	PTFE Teflon	Hastelloy C-276 *2
D	Hastelloy C-276 equivalent *3	Tantalum	PTFE Teflon	Hastelloy C-276 *2
B#	Monel equivalent *4	Monel	PTFE Teflon	Monel

*1: Cast version of 316 SST. Equivalent to SCS14A.

*2: *3: *4:

Hastelloy C-276 or ASTM N10276. Indicated material is equivalent to ASTM CW-12MW. Indicated material is equivalent to ASTM M35-2.

The "#marks indicate the construction materials conform to NACE material recommendations per MR0175/ISO 15156. Please refer to the latest standards for details. Selected materials also conform to NACE MR0103.

■ OPTIONAL SPECIFICATIONS (For Explosion Protected type) "◊"

Item	Description	Code
Factory Mutual (FM)	FM Explosionproof Approval ^{*1} Applicable Standard: FM3600, FM3615, FM3810, ANSI/NEMA 250 Explosionproof for Class I, Division 1, Groups B, C and D, Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G, in Hazardous locations, indoors and outdoors (NEMA TYPE 4X) "FACTORY SEALED, CONDUIT SEAL NOT REQUIRED." Temperature class: T6, Amb. Temp.: -40 to 60°C (-40 to 140°F)	FF1
	 FM Intrinsically safe Approval *1*2 Applicable Standard: FM3600, FM3610, FM3611, FM3810 Intrinsically Safe for Class I, Division 1, Groups A, B, C & D, Class II, Division 1, Groups E, F & G and Class III, Division 1, Class I, Zone 0, in Hazardous Locations, AEx ia IIC Nonincendive for Class I, Division 2, Groups A, B, C & D, Class II, Division. 2, Groups F & G, Class I, Zone 2, Group IIC, in Hazardous Locations Enclosure: "NEMA TYPE 4X", Temp. Class: T4, Amb. Temp.: -60 to 60°C (-75 to 140°F) Intrinsically Safe Apparatus Parameters [Groups A, B, C, D, E, F and G] Vmax=30 V, Imax=220 mA, Pmax=1 W, Ci=6 nF, Li=0 µH [Groups C, D, E, F and G] Vmax=30 V, Imax=225 mA, Pmax=1 W, Ci=6 nF, Li=0 µH	FS1
	Combined FF1 and FS1 *1*2	FU1
ATEX	ATEX Flameproof Approval ^{*1} Applicable Standard: EN 60079-0:2009, EN 60079-1:2007, EN 60079-31:2009 Certificate: KEMA 07ATEX0109 X II 2G, 2D Ex d IIC T6T4 Gb, Ex tb IIIC T85°C Db IP6X Degree of protection: IP66/IP67 Amb. Temp. (Tamb) for gas-proof : T4; -50 to 75°C (-58 to 167°F), T5; -50 to 80°C (-58 to 176°F), T6; -50 to 75°C (-58 to 167°F) Max. process Temp. for gas-proof (Tp): T4; 120°C (248°F), T5; 100°C (212°F), T6; 85°C (185°F) Max. surface Temp. for dust-proof: T85°C (Tamb: -30 to 75°C, Tp: 85°C) ^{*3}	KF22
	ATEX Intrinsically safe Approval ^{*1*2} Applicable Standard: EN 60079-0:2009, EN 60079-11:2007, EN 60079-11:2012, EN 60079-26:2007, EN 61241-11:2006 Certificate: DEKRA 11ATEX0228 X II 1G, 2D Ex ia IIC T4 Ga, Ex ia IIIC T85°C T100°C T120°C Db Degree of protection: IP66/IP67 Amb. Temp. (Tamb) for EPL Ga: -50 to 60°C (-58 to 140°F) Maximum Process Temp. (Tp) for EPL Ga:120°C Electrical data: Ui=30 V, Ii=200 mA, Pi=0.9 W, Ci=27.6 nF, Li=0 μH Amb. Temp. for EPL Db: -30 to 60°C ^{*3} Max. surface Temp. for EPL Db: T85°C (Tp: 80°C), T100°C (Tp: 100°C), T120°C (Tp: 120°C)	KS21
	Combined KF22, KS21 and ATEX Intrinsically safe Ex ic *1*2 [ATEX Intrinsically safe Ex ic] Applicable Standard: EN 60079-0:2009, EN 60079-0:2012, EN 60079-11:2012 II 3G Ex ic IIC T4 Gc, Amb. Temp.: –30 to 60°C (–22 to 140°F) *3 Ui=30 V, Ci=27.6 nF, Li=0 μH	KU22

Item	Description	Code
Canadian Standards Association (CSA)	CSA Explosionproof Approval ^{*1} Certificate: 2014354 Applicable Standard: C22.2 No.0, C22.2 No.0.4, C22.2 No.0.5, C22.2 No.25, C22.2 No.30, C22.2 No.94, C22.2 No.60079-0, C22.2 No.60079-1, C22.2 No.61010-1 Explosion-proof for Class I, Groups B, C and D. Dustignition-proof for Class II/III, Groups E, F and G. When installed in Division 2, "SEAL NOT REQUIRED" Enclosure: NEMA TYPE 4X, Temp. Code: T6T4 Ex d IIC T6T4 Enclosure: IP66/IP67 Max.Process Temp.: T4;120°C(248°F), T5;100°C(212°F), T6; 85°C(185°F) Amb.Temp.: -50 to 75°C(-58 to 167°F) for T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T6 ^{*3} Process Sealing Certification Dual Seal Certified by CSA to the requirement of ANSI/ISA 12.27.01 No additional sealing required Primary seal failure annunciation: at the zero adjustment screw	CF1
	 CSA Intrinsically safe Approval ^{*1*2} Certificate: 1606623 [For CSA C22.2] Applicable Standard: C22.2 No.0, C22.2 No.0.4, C22.2 No.25, C22.2 No.94, C22.2 No.157, C22.2 No.213, C22.2 No.61010-1, C22.2 No.60079-0 Intrinsically Safe for Class I, Division 1, Groups A, B, C & D, Class II, Division 1, Groups E, F & G, Class III, Division 1, Nonincendive for Class I, Division 2, Groups A, B, C & D, Class II, Division 2, Groups F & G, Class III, Division 1 Enclosure: NEMA TYPE 4X, Temp. Code: T4 Amb. Temp.: –50 to 60°C(–58 to 140°F) ^{*3} Electrical Parameters: [Intrinsically Safe] Vmax=30V, Imax=200mA, Pmax=0.9W, Ci=10nF, Li=0 μH [Nonincendive] Vmax=30V, Ci=10nF, Li=0 μH [For CSA E60079] Applicable Standard: CAN/CSA E60079-11, CAN/CSA E60079-15, IEC 60529:2001 Ex ia IIC T4, Ex nL IIC T4 Enclosure: IP66/IP67 Amb. Temp: –50 to 60°C(–58 to 140°F) ^{*3}, Max. Process Temp:: 120°C(248°F) Electrical Parameters: [Ex ia] Ui=30V, Ii=200mA, Pi=0.9W, Ci=10nF, Li=0 μH [Ex nL] Ui=30V, Ci=10nF, Li=0 μH Process Sealing Certification Dual Seal Certified by CSA to the requirement of ANSI/ISA 12.27.01 No additional sealing required Primary seal failure annunciation: at the zero adjustment screw 	CS1
	Combined CF1 and CS1 *1*2	CU1
IECEx Scheme	IECEx Flameproof Approval *1 Applicable Standard: IEC 60079-0:2004, IEC60079-1:2003 Certificate: IECEx CSA 07.0008 Flameproof for Zone 1, Ex d IIC T6T4 Enclosure: IP66/IP67 Max.Process Temp.: T4;120°C(248°F), T5;100°C(212°F), T6; 85°C(185°F) Amb.Temp.: –50 to 75°C(–58 to 167°F) for T4, –50 to 80°C(–58 to 176°F) for T5, –50 to 75°C(–58 to 167°F) for T6	SF2
	$\label{eq:linking} \begin{array}{l} \mbox{IECEx Intrinsically safe, type n and Flameproof Approval $^{1+2}$ Intrinsically safe and type n $$ Applicable Standard: IEC 60079-0:2000, IEC 60079-11:1999, IEC 60079-15:2001 $$ Certificate: IECEx CSA 05.0005 $$ Ex ia IIC T4, Ex nL IIC T4 Enclosure: IP66/IP67 $$ Amb. Temp.: -50 to 60°C(-58 to 140°F), Max. Process Temp.: 120°C(248°F) $$ Electrical Parameters: [Ex ia] Ui=30V, Ii=200mA, Pi=0.9W, Ci=10nF, Li=0 $$ \mu$ H $$ [Ex nL] Ui=30V, Ci=10nF, Li=0 $$ \mu$ H $$ IEx nL] Ui=30V, Ci=10nF, Li=0 $$ \mu$ H $$ Flameproof $$ Applicable Standard: IEC 60079-0:2004, IEC60079-1:2003 $$ Certificate: IECEx CSA 07.0008 $$ Flameproof for Zone 1, Ex d IIC T6T4 Enclosure: IP66/IP67 $$ Max.Process Temp.: T4;120°C(248°F), T5;100°C(212°F), T6; 85°C(185°F) $$ Amb.Temp.: -50 to 75°C(-58 to 167°F) for T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T6 $$ T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T6 $$ T5 $$ Table Standard: IEC 60079-T4 $$ Table Standard: IEC 60079-T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T6 $$ T5 $$ Table Standard: IEC 60079-T4 $$ Table Standard: IEC 60079-T5, -50 to 75°C(-58 to 167°F) for T4, -50 to 80°C(-58 to 176°F) for T5, -50 to 75°C(-58 to 167°F) for T6 $$ T5 $$ Table Standard: IEC 60079-T4 $$ Table Standard: IEC 60079-T5, -50 to 75°C(-58 to 167°F) for T6 $$ Table Standard: IEC 60079-T5, -50 to 75°C(-58 to 167°F) for T6 $$ Table Standard: IEC 60079-T5, -50 to 75°C(-58 to 167°F) for T6 $$ Table Standard: IEC 60079-T4 $$ Ta$	SU2
Combination of Approval	Combination of KU22, FU1 and CU1 *1*2	V1U1

*1: *2: *3:

Applicable for Electrical connection code 2, 4, 7, 9, C and D. Not applicable for option code /AL. Lower limit of ambient temperature is –15°C (5°F) when /HE is specified.

■ OPTIONAL SPECIFICATIONS

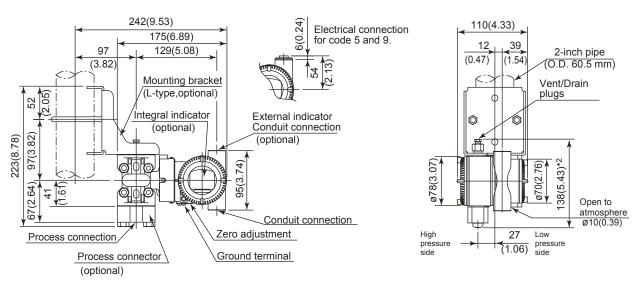
	Item		Desc	ription		Code
Painting	Color change	Amplifier cover only*9			P□	
		Amplifier cover and terminal cov	ver, Munsell 7.5	6 R4/14		PR
	Coating change	Anti-corrosion coating*1*9				X2
316 SST ext	erior parts	316 SST zero-adjustment screw	v and setscrews	s ^{*10}		HC
Fluoro-rubbe	er O-ring	All O-rings of amplifier housing.	Lower limit of a	ambient temp	perature: –15°C (5°F)	HE
Lightning protector		Transmitter power supply voltage: 10.5 to 32 V DC (10.5 to 30 V DC for intrinsically safe type, 9 to 32 V DC for Fieldbus communication type.) Allowable current: Max. 6000 A (1×40 µs), Repeating 1000 A (1×40 µs) 100 times Applicable Standards: IEC 61000-4-4, IEC 61000-4-5			А	
Status outpu	lt*2	Transistor output (sink type) Contact rating: 10.5 to 30 V DC,	, 120 mA DC(m	iax) Low le	vel: 0 to 2 V DC	AL
Oil-prohibited	d use ^{*3}	Degrease cleansing treatment				K1
		Degrease cleansing treatment w Operating temperature -20 to 8			ule.	K2
Oil-prohibited use with dehydrating treatment*3		Degrease cleansing and dehydr	rating treatmen	t		K5
dehydrating	treatment*3	Degrease cleansing and dehydr Operating temperature –20 to 8			ated oilfilled capsule.	K6
Capsule fill fl	luid	Flourinated oil filled in capsule Operating temperature –20 to 8	0°C (−4 to 176	°F)		К3
Calibration u	inits ^{*4}	P calibration (psi unit)				D1
	bar calibration (bar unit) (See Table for Span and Range Limits.		r Span and Range Limits.)	D3		
		M calibration (kgf/cm ² unit)		D4		
Long vent*5			tal length: 119 mm (standard: 34 mm); Total length when combining with Optional code K1, , K5, and K6: 130 mm. Material: 316SST.		U1	
Gold-plated	capsule gasket *11	Gold-plated 316L SST capsule g	gasket. Withou	t drain and v	ent plugs.	GS
Gold-plated	diaphragm ^{*12}	Surface of isolating diaphragms	are gold plated	d, effective fo	or hydrogen permeation.	A1
Output limits operation*6	and failure	Failure alarm down-scale : Output status at CPU failure and hardware error is -5%, 3.2mA DC or less.			C1	
		NAMUR NE43 Compliant	Failure alarm failure and ha	down-scale ardware erro	: Output status at CPU r is −5%, 3.2 mA DC or less.	C2
		Output signal limits: 3.8 mA to 20.5 mA	Failure alarm up-scale: Output status at CPU failure and hardware error is 110%, 21.6 mA or more.		C3	
Body option*	*7 M M	Right side high pressure, without drain and vent plugs		N1		
Terminal - Side		N1 and Process connection, based on IEC61518 with female thread on both sides of cover flange, with blind kidney flanges on back		N2		
	F03E.ai	N2, and Material certificate for cover flange, diaphragm, capsule body, and blind kidney flange			N3	
Wired tag pla		316 SST tag plate wired onto tra	ansmitter			N4
Data configu	iration at factory*8	Data configuration for HART communication type Software damping, Descriptor, Message		Software damping, Descriptor, Message	СА	
		Data configuration for BRAIN co	ommunication t	уре	Software damping	СВ
Advanced di	agnostics ^{*13}	Multi-sensing process monitorin • Impulse line blockage detectio • Heat trace monitoring	ng n ^{*14}			DG6
Material cert	ificate*15	Cover flange *16				M01
		Cover flange, Process connecto	or *17			M11
Pressure tes	st/	Test Pressure: 500 kPa (2000 in				T11
Leak test cer	rtificate*22	Test Pressure: 3.5 MPa (500 ps	Nitrogen(N ₂) Gas ^{*21}		T01	
		Test Pressure: 16 MPa (2300 ps			Retention time: one minute	T12

- Not applicable with color change option. *1·
- *2: When this option code is specified, check terminals are not available. Not applicable for output signal code F and G.
- *3: Applicable for wetted parts material code S, M, H and T.
- *4: The unit of MWP (Max. working pressure) on the name plate of a housing is the same unit as specified by option codes D1, D3, and D4.
- *5: Applicable for vertical impulse piping type (installation code 3 or 7) and wetted parts material code S, M, H and T.
- *6: Applicable for output signal codes D, E and J. The hardware error indicates faulty amplifier or capsule.
- *7: Applicable for wetted parts material code S, M, H and T.; process connection codes 3, 4, and 5; installation code 9; and mounting bracket code N. Process connection faces on the other side of zero adjustment screw.
- *8: Also see 'Ordering Information'.
- *9:
- Not applicable for amplifier housing code 2 and 3. 316 or 316L SST. The specification is included in amplifier code 2. *10:
- *11: Applicable for wetted parts material code S; process connection code 0 and 5; and installation code 8 and 9. Not applicable for option code U1, N2, N3 and M11. No PTFE is used for wetted parts.
- Applicable for wetted parts material code S. *12:
- Applicable only for output signal code E and J. *13:
- *14: The change of pressure fluctuation is monitored and then detects the impulse line blockage. See TI 01C25A31-01E for detailed technical information required for using this function.
- *15: Material traceability certification, per EN 10204 3.1B.
- *16: Applicable for process connections code 0 and 5.
- *17: Applicable for process connections code 1, 2, 3, and 4.
- *18: Applicable for capsule code H.
- *19: Applicable for capsule code A.
- *20: Applicable for capsule code B.
- *21: Pure nitrogen gas is used for oil-prohibited use (option codes K1, K2, K5, and K6).
- *22: The unit on the certificate is always Pa unit regardless of selection of option code D1, D3 or D4.

DIMENSIONS

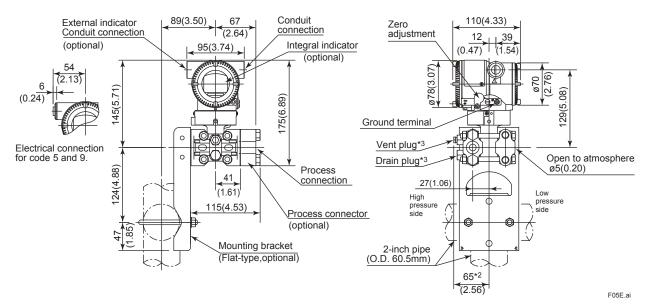
Unit: mm (approx.inch)

 Vertical Impulse Piping Type (INSTALLATION CODE '7') (For CODE '3', refer to the notes below.) Wetted Parts Material code : S



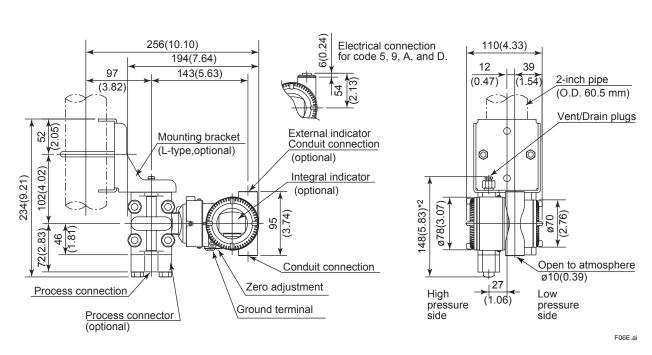
F04E.ai

Horizontal Impulse Piping Type (INSTALLATION CODE '9') (For CODE '8', refer to the notes below.) Wetted Parts Material code : S



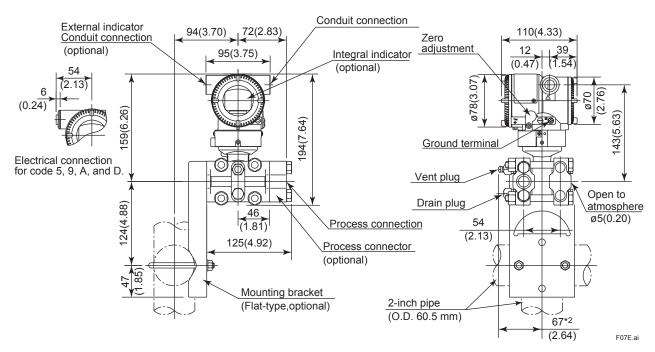
- *1: When Installation code '3' or '8' is selected, high and low pressure side on above figure are reversed. (i.e. High pressure side is on the right side.)
- * 2: When option code K1, K2, K5 or K6 is specified, add 15mm(0.59inch) to the value in the figure.
- * 3: Not available when option code GS is selected.

Unit: mm (approx.inch)



• Vertical Impulse Piping Type (INSTALLATION CODE '7') (For CODE '3', refer to the notes below.) Wetted Parts Material code: H, M, T, A, D, B

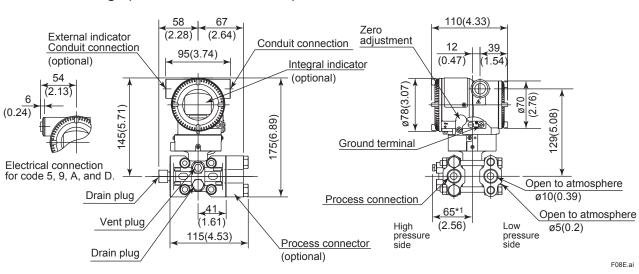
• Horizontal Impulse Piping Type (INSTALLATION CODE '9') (For CODE '8', refer to the notes below.) Wetted Parts Material code: H, M, T, A, D, B



* 1: When Installation code 3 or 8 is selected, high and low pressure side on above figure are reversed. (i.e. High pressure side is on the right side.)

* 2: When Option code K1, K2, K5, or K6 is selected, add 15 mm(0.59 inch) to the value in the figure.

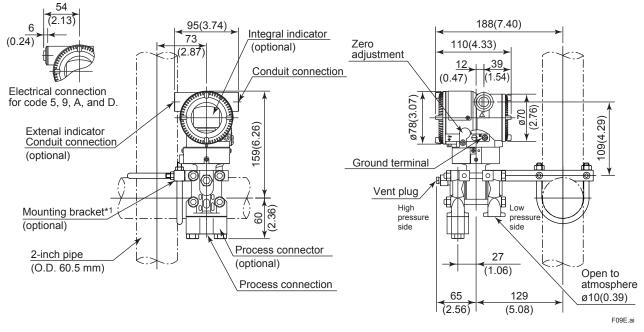
Unit: mm (approx.inch)



• Universal Flange (INSTALLATION CODE 'U')

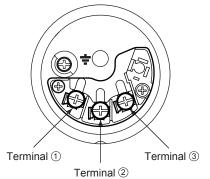
*1: When Option code K1, K2, K5, or K6 is selected, add 15 mm(0.59 inch) to the value.





*1: A transmitter with SST housing is not applicable for mounting to horizontal 2-inch pipe.

• Terminal Configuration



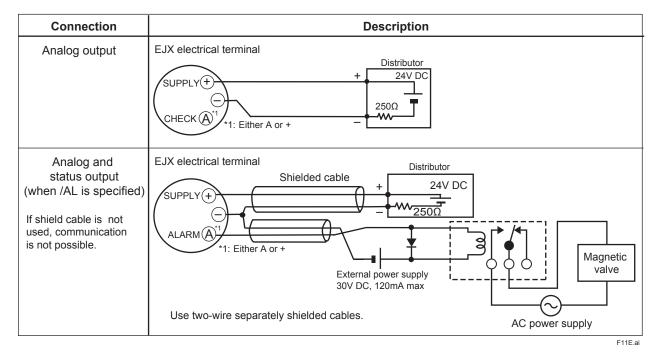
• Terminal Wiring

SUPPLY	+	$\begin{bmatrix} 1\\ 2 \end{bmatrix}$ Power supply and output terminals		
CHECK	+ _	3 2 External indicator (ammeter) terminals*1*2 or		
ALARM	+ -	3 Status contact output terminals ^{*2} (when /AL is specified)		
Ground terminal				

*1: When using an external indicator or check meter, the internal resistance must be 10 Ω or less. A check meter or indicator cannot be connected when /AL option is specified.

*2: Not available for FOUNDATION Fieldbus and PROFIBUS PA communication types.

• Wiring Example for Analog Output and Status Output



< Ordering Information > "0" Specify the following when ordering

For output signal code –J, refer to GS 01C25T01-01EN.

- 1. Model, suffix codes, and option codes
- 2. Calibration range and units
 - Calibration range can be specified with range value specifications up to 5 digits (excluding any decimal point) for low or high range limits within the range of -32000 to 32000. When reverse range is designated, specify Lower Range Value(LRV) as greater than Upper Range Value(URV.)
 - 2) Specify only one unit from the table, 'Factory Settings' when shipped.'
- 3. Display scale and units (for transmitters equipped with integral indicator only) Specify either 0 to 100 % or engineering unit scale and 'Range and Unit' for engineering units scale: Scale range can be specified with range limit specifications up to 5 digits (excluding any decimal point) for low or high range limits within the range of -32000 to 32000. The unit display consists of 6-digit, therefore, if the specified unit is longer than 7 characters excluding '/', the first 6 characters will be displayed on the unit display.
- Tag Number (if required) Specified characters (up to 16 characters for BRAIN, 22 characters for HART) are engraved on the stainless steel tag plate fixed on the housing.
- SOFTWARE TAG (for HART only. If required) Specified characters (up to 32 characters) are set as "Tag" (the first 8 characters) and "Long tag"*1 (32 characters) in the amplifier memory. Use alphanumeric capital letters. When the "SOFTWARE TAG" is not specified, specified "TAG NO" is set as "Tag" (the first 8 characters) and "Long tag"*1 (22 characters) in the amplifier memory. *1: applicable only when HART 7 is selected.
- Other factory configurations (if required) Specifying option code CA or CB will allow further configuration at factory. Following are configurable items and setting range. [/CA : For HART communication type]
 - 1) Descriptor (up to 16 characters)
 - 2) Message (up to 30 characters)
 - 3) Software damping in second (0.00 to 100.00)
 - [/CB : For BRAIN communication type]
 - 1) Software damping in second (0.00 to 100.00)

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< Factory Setting > "0"

Tag number	As specified in order
Software damping *1	'2.00 s' or as specified in order
Calibration range lower range value	As specified in order
Calibration range upper range value	As specified in order
Calibration range units	Selected from mmH ₂ O, mmH ₂ O(68°F), mmAq ^{*2} , mmWG ^{*2} , mmHg, Pa, hPa ^{*2} , kPa, MPa, mbar, bar, gf/cm ² , kgf/cm ² , inH ₂ O, inH ₂ O(68°F), inHg, ftH ₂ O, ftH ₂ O(68°F) or psi. (Only one unit can be specified)
Display setting	Designated value specified in order. (%, or user scaled value.)

*1: To specify this item at factory, option code CA or CB is required.

*2: Not available for HART protocol type.

< Material Cross Reference >

ASTM	JIS
316	SUS316
F316	SUSF316
316L	SUS316L
F316L	SUSF316L
304	SUS304
F304	SUSF304
660	SUH660
B7	SNB7
CF-8M	SCS14A